

**REMARKS**

This amendment, submitted in response to the Office Action dated July 31, 2003, is believed to be fully responsive to each point of objection raised therein. Accordingly, favorable reconsideration is respectfully requested.

As a preliminary matter, the Examiner objected to claim 11 because of informalities. Claim 11 has been corrected as indicated above. It should now be in patentable form.

The Examiner rejected claims 4-5 and 14 under 35 U.S.C. § 112, second paragraph, as being indefinite. The claims have been amended as indicated in the Appendix.

Applicant submits that the Examiner's comments on page 4 of the detailed action are not appropriate in view of MPEP 2136 (2002). For purposes of rigorous examination, the Examiner should consider all relevant art.

Turning to the merits of the Office Action, claims 2-14 are pending in the present application. The Examiner rejected claims 13-14 under 35 U.S.C. § 102(e) as being anticipated by Kubokawa (US 6330019 B1). Claims 2-3, 6-8, 10, and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kubokawa in view of Ferschl et al. (USP 5196866). Claims 2-8 have alternatively been rejected under 35 U.S.C. § 103(a) as being unpatentable over Inoue et al. (Pub. No. 2002/0015088) in view of Ferschl. The Examiner rejected claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Kubokawa in view of Ferschl and further in view of Okazaki et al. (Pub. No. 2002/0090172 A1). The Examiner objected to claim 11 as being dependent upon a rejected base claim, but has indicated it would be allowed if rewritten in independent form. Applicant has not rewritten claim 11 into independent form. Applicant submits the following in traversal of the rejections.

**Rejection of claims 13-14 under 102 as being anticipated by Kubokawa**

**Claim 13**

Claim 13 describes the end most beam source of the first multiple beam forming light source and the end most beam source of the second multiple beam forming light source do not overlap each other. The Examiner cites column 5, lines 29-34 of Kubokawa for teaching these elements of the claims. The respective column and lines cited by the Examiner describe the center of the spots 61-69 do not mutually overlap.

Applicant submits that although the centers of the shifted optical fibers do not overlap, there is no indication that an end most beam source, and not just the centers of the light sources, do not overlap. In particular, upon viewing the optical fibers shown in Fig. 3, all of the ends of the beam forming sources overlap and are aligned. Column 3, lines 39-41. It would seem that if the optical fibers were not all of the same length and did not overlap, some parts of an image would not be irradiated, since Kubokawa does not teach a tilting mechanism. Therefore, claim 13 should be deemed patentable.

**Claim 14**

Claim 14 describes a tilt angle change unit. In order to support an anticipation rejection, all of the elements of the claims must be taught in the prior art. Since the Examiner has failed to demonstrate where Kubokawa discloses a tilt angle change unit, most likely because Kubokawa does not disclose a tilt angle change unit (See Examiner's comments in Office Action at p. 6), claim 14 should be deemed patentable.

Claim 14 further describes by rotating said multibeam light source, there is a change in the exposure condition from a first exposure condition to a second exposure condition in a direction of a subscan. The respective column and lines cited by the Examiner (column 1, lines 27-35) describe a plurality of optical fibers arrayed on a laser head. The resolution is determined by the distance between two optical fibers and tilting the optical fibers to achieve higher recording resolution. There appears to be only one exposure where the drum is rotated in a main-scanning direction while the laser head is moved in a sub-scanning direction. Column 1, lines 20-26. Since only one exposure is described in Kubokawa, claim 14 is not anticipated.

**Rejection of claims 2-3, 6-8, 10, and 12 under 103 over Kubokawa in view of Ferschl**

**Claims 2 and 8**

Claims 2 and 8 describe a tilt angle changing unit. The Examiner indicates that Kubokawa does not explicitly teach a tilt angle changing unit, and cites Ferschl to cure the deficiency.

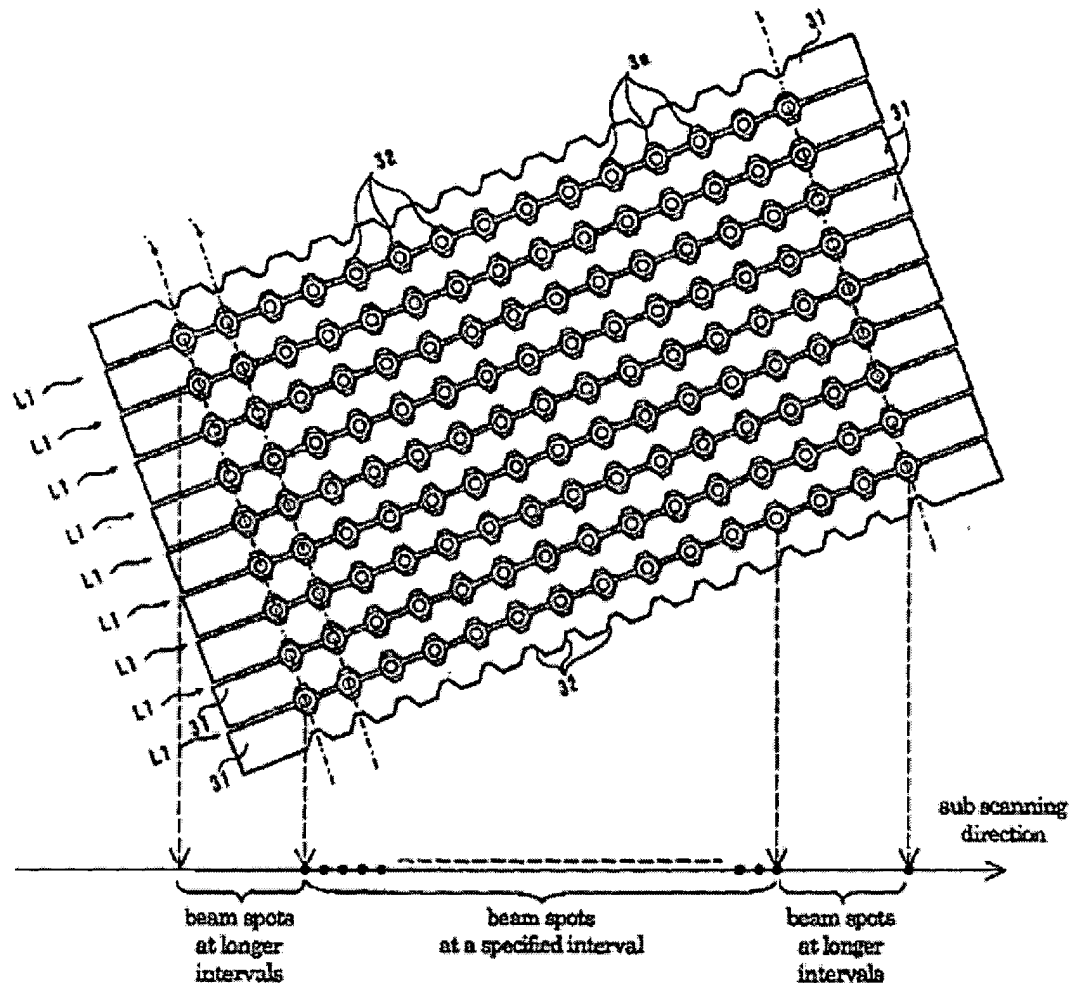
Applicant submits that Ferschl does not teach a tilt angle change unit as described in the present invention. The tilt angle change unit of the present invention makes a change from a first exposure condition to a second exposure condition by rotating a multibeam light source. There appears to be only one exposure in Ferschl (see claim 1). Therefore, Ferschl does not teach a change from a first exposure condition to a second exposure condition by rotating the multibeam light source. Furthermore, Ferschl does not cure the deficiencies of Kubokawa.

Furthermore, the combination of Kubokawa and Ferschl is not obvious. In particular, Kubokawa teaches away from the use of a tilt angle changing unit as described in Ferschl. Kubokawa states that when tilting substrates to obtain higher resolution, they must be tilted

accurately, which would require the image recording apparatus to be provided with a controller for controlling the inclination of the substrates which would mean additional costs. Moreover, improving resolution requires the angle of the tilting the substrates to be increased. However, a greater angle may cause the inconvenience of increasing the possibility of different laser beams overlapping one another. Column 1, lines 49-59.

Furthermore, in claim 2, each of the first multiple beam forming light source and the second multiple beam forming light source can be arranged in the subscanning direction alternately at a specified interval and are thus capable of setting the first and second exposure conditions as one of the exposure conditions to be changed.

On the contrary, in Kubokawa, if the head configuration as shown in Fig. 3 of Kubokawa has a tilt angle, light sources in multiple rows of the multiple beam forming light source cannot be arranged alternatively at a specified interval in the subscanning direction in the most end portion and its vicinity. In particular, since the shift amount among the light sources arranged in multiple rows is small, a defect of beam spots results, such as irregular rows of beam spots. See illustration below.



Accordingly, even if Kubokawa's head configuration is combined with Ferschl the combination would never achieve the first and second exposure conditions recited in claim 2, where each of the first multiple beam forming light sources and the second multiple beam forming light source is arranged in the subscanning direction alternately at a specified interval.

As indicated on page 22, line 11 to page 23, line 3 in the specification of the present application, if each of the light sources in the subscanning direction are not arranged alternately at a specified interval, an exposure defect results.

For the above reasons, claims 2 and 8 and their dependent claims should be deemed patentable.

**Claim 3**

Claim 3 describes an optical system in an optical path between the light source and the recording material, and a first beam pitch formed under a first exposure condition and rotating the tilt angle changing unit to obtain a second beam pitch formed under a second exposure condition.

Assuming *arguendo*, the zoom lens 6 of Kubokawa teaches the optical system of the present invention, the Examiner has failed to demonstrate where the references disclose a first exposure condition and tilting the tilt angle change unit to obtain a second exposure condition. As previously indicated, there is only one exposure condition in Ferschl. Therefore, claim 3 should be deemed patentable.

**Claim 6**

Claim 6 is patentable based on its dependency on claim 1. Ferschl does not obviate the deficiencies of the primary reference.

**Rejection of claims 2-8 under 103 over Inoue in view of Ferschl**

**Claims 2 and 8**

Claims 2 and 8 describe a tilt angle change unit. As previously indicated, Ferschl does not teach the tilt angle change unit of the present invention. The tilt angle change unit of the present invention rotates the multibeam light source to change from a first exposure condition to a second exposure condition. In Ferschl, there appears to be only one exposure. In exposing the printing medium on drum 12, a tubular member 53 containing a keyway 59 is attached to a key

in a barrel portion 50 in order to align the array at a predetermined angle. The printing medium is then scanned with the array of optical fibers which are positioned at a preselected angle.

Column 8, lines 17-32.

Assuming *arguendo*, Ferschl teaches the tilt angle change unit of the present invention, the combination of Inoue and Ferschl is not obvious. A goal of Inoue is to decrease or remove an inclination of the beam sources. This is done by calculating the amount of shift between the beam sources. See paragraph [0267]. Since shifting of the beam sources is used to replace an incline requirement, there would be no reason to apply a tilt angle change unit of Ferschl. Inserting an incline where an incline is not desired, is not obvious, and the Examiner's reasoning is clearly a result of hindsight upon viewing the Applicant's invention.

Furthermore, neither Inoue nor Ferschl describe that each of the first multiple beam forming light source and the second multiple beam forming light source can be arranged alternatively in the subscanning direction at a predetermined interval. Therefore, claims 2 and 8 and their dependent claims should be deemed patentable.

**Rejection of claim 9 under 103 as being unpatentable over  
Kubokawa in view of Ferschl and Okazaki**

Claim 9 has been rejected as being unpatentable over Kubokawa, Ferschl and Okazaki. However, Okazaki (Reel 012712, Frame 0314, Date recorded 3/22/2002) has a common assignee with the current application (Reel 012337, Frame 0864, Date recorded 12/3/2001) and the subject matter of Okazaki and the claimed invention were subject to a common obligation of assignment pursuant to MPEP 706.02(l)(2) and 35 U.S.C. § 103(c). This demonstration of common obligation of assignment removes Okazaki as a reference, which will overcome the rejection of claim 9.

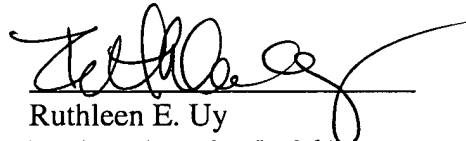
Furthermore, claim 9 should be deemed patentable since Okazaki does not cure the deficiencies of Kubokawa and Ferschl.

Finally, claims 15 and 16 has been added to provide a more varied scope of protection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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